

Patent Claims

1. A method for the automated analysis of a mobile radio telephone system, in which:

5 a) a multiplicity of test connections are established between two terminals, particularly a mobile terminal and a stationary or mobile terminal, as part of a test phase, and

b) a plurality of protocol parameter values are
10 acquired during the test phase, characterized in that

c) selected protocol parameter values are stored as record in a database with a suitable structure,

d) the stored protocol parameter values are evaluated by means of a plurality of modules, a module
15 being used for evaluating the protocol parameter values with respect to an assessment criterion,

e) for each module, a module quality value is calculated as mean value of a plurality of event quality values, the event quality values representing a
20 measure of quality for in each case one particular event type,

f) a system quality value is calculated from the module quality values for the analysis of the mobile radio telephone system.

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2. The method as claimed in claim 1, characterized in that the protocol parameters acquired comprise internal and/or external system protocol parameters, signaling messages being considered to be internal system
30 protocol parameters and values measured from the outside being considered as external system protocol parameters.

3. The method as claimed in claim 1 or 2,
35 characterized in that a record is provided with a time stamp and allocated to a corresponding group of records in accordance with a predetermined grouping criterion.

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4. The method as claimed in one of claims 1 to 3, characterized in that, for each module, at least one event table is generated in that a search is made in the database for predetermined protocol parameter values identifying a particular event or for combinations of protocol parameter values and the corresponding records are wholly or partially stored in the event tables.
5. The method as claimed in claim 4, characterized in that, for each event found, the time and a selectable or predetermined leading and/or trailing time is determined and, for these events, relevant data of other events located within the leading time and trailing time are also picked out of the database, are stored in the event tables and the events found are classified on the basis of the data of these relevant events.
6. The method as claimed in either of claims 4 and 5, characterized in that the event quality value is calculated for an event in that
- a) a numerical value is allocated to each signaling message or sequence of signaling messages,
 - b) an average record is calculated from the records of all events with the same classification in that a mean value is calculated for each protocol parameter value or, respectively, for each numerical value of the signaling messages,
 - c) an event vector is formed from the mean values of the average record for each event, and
 - d) the event vector is subjected to a scalar multiplication by a predetermined event-specific weighting vector.
7. The method as claimed in one of claims 1 to 6, characterized in that the system quality value is calculated with respect to a grouping criterion by a scalar multiplication of a module quality vector, the

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components of which are the module quality values of the individual modules, by a module weighting vector, the module weighting vector being dependent on the grouping criterion.

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8. The method as claimed in one of claims 1 to 7, characterized in that the system quality values are displayed graphically, particularly as a histogram.

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9. The method as claimed in one of claims 3 to 8, characterized in that the system quality values are correlated with one another with respect to various grouping criteria.

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10. The method as claimed in one of claims 2 to 9, characterized in that at least a speech quality, a duration for establishing the test connection and location, time, speed and direction of movement of the mobile terminal are acquired as external system protocol parameters.

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11. An analysis arrangement for carrying out the method as claimed in claim 1, characterized in that the analysis arrangement comprises a conventional, public mobile radio telephone network, at least two terminals for establishing the test connections, at least one measuring device for acquiring the protocol parameter values and an evaluating device with a database for storing selected protocol parameter values as records and an evaluating unit for evaluating the records, the evaluating unit exhibiting a number of modules for calculating in each case one module quality value with respect to an assessment criterion as mean value of a plurality of event quality values which in each case represent a measure of quality for a particular event type, and means for calculating a system quality value as weighted sum of the individual module quality values.

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12. An evaluating device for an analysis arrangement as claimed in claim 11, characterized in that it comprises means for importing acquired protocol parameter values, means for storing selected protocol parameter values as records and an evaluating unit, the
5 evaluating unit exhibiting a number of modules for calculating in each case one module quality value with respect to an assessment criterion as mean value of a plurality of event quality values which in each case
10 represent a measure of quality for a particular event type, and means for calculating a system quality value as weighted sum of the individual module quality values.